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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/697,694	10/31/2003	Cullen E. Bash	100201724-3	9832

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EXAMINER

NORMAN, MARC E

ART UNIT PAPER NUMBER

3744

DATE MAILED: 05/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/697,694

Applicant(s)

BASH ET AL.

Examiner

Marc E. Norman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,6,12,25,38 and 51-70 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4,6,12,25,38,51,52,55,56,58-61,63-66 and 68-70 is/are rejected.
- 7) ☒ Claim(s) 53,54,57,62 and 67 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/31/03</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 2, 52, 55, and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spinazzola et al. (U.S. Patent 6,412,292) in view of Yamagishi et al.

As per claim 1, Spinazzola et al. teaches a cooling system for cooling computer racks comprising a cooling device including fans 16 and 25; a plenum 4b having a plurality of returns 24 and an outlet 28 in fluid combination with the fans, wherein the returns are configured for removing the cooling fluid from the data center and are operable to vary a speed of fans 25 and thus a characteristic of the removal through the returns (see column 5, lines 39-41 regarding fans 25 being of variable speed). Spinazzola et al. does not teach the cooling system being driven by a variable capacity compressor. However, variable speed compressors are common and well-

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known in the art of air conditioning. Yamagishi et al., for example, teaches a plenum-based system with a variable speed fan 32 wherein the cooling system is driven by variable speed compressor 14. It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply a variable speed compressor such as that of Yamagishi et al. to the system of Spinazzola et al. for the purpose of controlling the degree of cooling performed by the system.

As per claim 2, Spinazzola et al. teaches the cooling characteristic being volume flow rate (in response to the speed variation of the fan).

As per claim 52, Spinazzola et al. teaches returns 24 having fans 25.

As per claim 55, controlling compressor speed is taught by Yamagishi et al. as discussed above regarding claim 1.

As per claim 56, Spinazzola et al. teaches varying the speed of the fan as discussed above regarding claim 1.

Claims 3, 4, 6, and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spinazzola et al. in view of Yamagishi et al. and further in view of Nakazato et al.

As per claims 3 and 4, Spinazzola does not specifically teach independent control of fans 25 in the returns to independently vary the characteristic of the cooling fluid removal. Nakazato et al. teaches a similar arrangement whereby fans 7f of returns 7b from the data racks 7 are controlled to independently vary the removal of cooling fluid from each of the racks according to the temperatures sensed by sensors 32 and 33. Nakazato et al. teaches controller 40 independently controlling the flow rate of each return (Figure 2); and a plurality of temperature sensors 32, 33 and controller 40 independently controlling the returns in response to the

measured condition (Figure 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply these air removal control features of Nakazato et al. to the plenum system of Spinazzola et al. for the purpose of accurately controlling the temperatures of the data racks.

As per claim 6, Nakazato et al. further teaches the controller controlling the speed of the fan (in response to sensors 32 and 33 at step 105).

As per claim 51, Nakazato et al. further teaches independently controlling the returns based on sensing temperature at locations outside the racks (step 105).

Claims 12, 25, 38, 58-61, 63-66, and 68-70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakazato et al. in view of Yamagishi et al.

As per claims 12, 25, and 38, Nakazato et al. discloses activating cooling system 11 and providing openings in a plurality of returns 7b, the returns removing cooling fluid from a plurality of data racks; sensing the temperature of the racks (by temperature sensor 33); and varying the removal of cooling fluid from the racks based on the temperature being outside a predetermined range (e.g., a range to provide an optimum temperature distribution within the room space based on set temperature T_s (column 5, lines 58-65)). Nakazato et al. does not specifically teach the returns being open able and closable, but official notice is taken that louvers for opening and closing vents are old and well known in the art and would have been obvious to one of ordinary skill in the art at the time of the invention for the purpose of allowing the vents to be closed when the system is not in operation. Further, Nakazato et al. does not specifically state that compressor 17 is a variable capacity compressor. However, as discussed above regarding claim 1, variable speed compressors are common and well-known in the art of

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air conditioning. Yamagishi et al., for example, teaches a multi-return cooling system with a variable speed fan 32 wherein the cooling system is driven by variable speed compressor 14. It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply a variable speed compressor such as that of Yamagishi et al. to the system of Nakazato et al. for the purpose of controlling the degree of cooling performed by the system.

As per claims 58, 63, and 68, Nakazato et al. further teaches independently controlling the returns based on sensing temperature at locations outside the racks (step 105).

As per claims 59, 64, and 69, controlling compressor speed is taught by Yamagishi et al. as discussed above regarding claims 12, 25, and 38.

As per claims 60, 65, and 70, see discussion above of similar claim 56.

As per claims 61 and 66, Nakazato et al. teaches varying the speed of the fan as discussed above regarding claims 12, 25, and 38.

Allowable Subject Matter

Claims 53, 54, 57, 62, and 67 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc E. Norman whose telephone number is 703-305-2711. The examiner can normally be reached on Mon.-Fri., 8:00-5:30, with first Fridays off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Denise Esquivel can be reached on 703-308-2597. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MN



MARC NORMAN
PRIMARY EXAMINER